

Bellwork: 4/29/13

Simplify the following expressions:

1) $(4-3\sqrt{6})-(2+\sqrt{6})$

$$4-3\sqrt{6}-2-\sqrt{6}$$

$$\boxed{2-2\sqrt{6}}$$

2) $(3-8\sqrt{2})(4+2\sqrt{2})$

$$12+6\sqrt{2}-32\sqrt{2}-16$$

$$\boxed{-20-26\sqrt{2}}$$

-32

~~16~~

22

$$\begin{aligned}
 &30) \quad (5\sqrt{3} + \sqrt{2})(5\sqrt{3} - \sqrt{2}) \\
 &\quad 25\sqrt{9} - \cancel{5\sqrt{6} + 5\sqrt{6}} - \sqrt{4} \\
 &\quad 75 - 2 = 73
 \end{aligned}$$

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Algebra II 5.0 Notes - Section 6.2 Product and Quotient Properties

Objective: To multiply and divide radical expressions

Product Property of Radicals:

$$\sqrt[n]{a} \cdot \sqrt[n]{b} = \sqrt[n]{ab}$$

Example 1: Multiply, then simplify each radical expression.

a.) $\sqrt{30} \cdot \sqrt{2}$

$$\begin{aligned}
 &\sqrt{60} \\
 &\begin{array}{c} 4 \quad 15 \\ \swarrow \quad \searrow \\ 2 \quad 3 \end{array} \\
 &\boxed{2\sqrt{15}}
 \end{aligned}$$

b.) $5\sqrt[3]{27} \cdot \sqrt[3]{3}$

$$\begin{aligned}
 &5\sqrt[3]{81} \\
 &\begin{array}{c} 9 \quad 9 \\ \swarrow \quad \searrow \\ 3 \quad 3 \end{array} \\
 &\boxed{15\sqrt[3]{3}}
 \end{aligned}$$

c.) $4\sqrt[3]{30} \cdot -\sqrt[3]{4}$

$$\begin{aligned}
 &-4\sqrt[3]{120} \\
 &\begin{array}{c} 30 \quad 4 \\ \swarrow \quad \searrow \\ 5 \quad 2 \end{array} \\
 &\boxed{-8\sqrt[3]{15}}
 \end{aligned}$$

need 3!
need 3!

d.) $\sqrt[3]{3} \cdot \sqrt[3]{-9r^3}$ *need 3!*

$\sqrt[3]{-27r^3}$
 $\sqrt[3]{-27} \sqrt[3]{r^3}$
 $-3r$

e.) $-2\sqrt{12b} \cdot 3\sqrt{8b^6}$

$-6\sqrt{96b^7}$
 $-6\sqrt{16 \cdot 6b^7}$
 $-6 \cdot 4b^3 \sqrt{6b}$
 $-24b^3 \sqrt{6b}$

f.) $\sqrt[3]{27a^3b^3} \cdot \sqrt[3]{5a^4b}$

$\sqrt[3]{135a^5b^4}$ *need 3! → 3*
 $\sqrt[3]{27 \cdot 5a^3b^3 \cdot ab}$
 $3ab \sqrt[3]{5a^2b}$

g.) $\sqrt[3]{16ab} \cdot \sqrt[3]{8ab^6}$

$\sqrt[3]{128a^2b^7}$ *need 3! → 3*
 $\sqrt[3]{128a^2b^6 \cdot b}$
 $4b^2 \sqrt[3]{2a^2b}$

h.) $\sqrt{3}(2\sqrt{2}-8)$

$2\sqrt{6} - 8\sqrt{3}$

i.) $2\sqrt{5}(-3\sqrt{6}+5\sqrt{5})$

$-6\sqrt{30} + 10\sqrt{25}$
 $-6\sqrt{30} + 50$

Homework: pg 17 #1-6 and 16-24

